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ABSTRACT

This economic analysis of migration was designed to test the following six hypotheses on the causes of out-migration from agriculture and its effect on the rural economy of Western Nigeria: (1) age of the rural family, of which the migrant is a member, is positively related to rural-urban migration rate; (2) a positive relationship exists between rural-urban migration rate and migrant education level; (3) distance between source region and receiving urban centers is negatively related to migration rate; (4) rural-urban migration is a positive function of the urban-rural earnings gap, weighted by the probability of securing urban employment; (5) availability of urban relatives is positively related to rural-urban migration rate; (6) rural-urban migration is a response to the "attractiveness" of urban areas. Data were collected from 180 families in six villages and 480 migrants from these 180 families who were living in urban Western Nigeria during 1971-72. Policy implications suggested the need to narrow the urban-rural earnings gap; invest in education tailored to labor demands of urban areas; and develop agricultural credit. The effect of migration on the rural economy was associated with increased outlay of hired labor, increased farm size, higher rural earnings per head, and a net transfer of capital. (JC)

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African Rural Employment Paper No. 10

DETERMINANTS AND IMPACT OF RURAL-URBAN MIGRATION: A CASE STUDY OF SELECTED COMMUNITIES IN WESTERN NIGERIA

U.S. DEPARTMENT OF HEALTH EDUCATION & WELFARE NATIONAL INSTITUTE OF EDUCATION

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THE AFRICAN RURAL EMPLOYMENT RESEARCH NETWORK

The African Rural Employment Research Network was initiated in 1971 by a group of scholars interested in comparative analysis of the development process in selected African countries with emphasis on rural employment problems. The research program has been jointly designed by scholars in African countries, at Michigan State University and at other universities in North America. Research emphasis is being directed to Sierra Leone, Nigeria and Ethiopia. In addition, individual scholars in other countries, such as Ghana, Zaire and Tanzania, are carrying out research on rural employment problems and are members of the Network.

The research program emphasizes joint and individual studies of rural employment such as the demand for labor in alternative production systems and in the rural nonfarm sector, the migration process as a link between rural and urban labor markets and the impact of macro-economic policies on labor absorption in agriculture. Attention will be directed to developing policy models to trace the consequences of alternative strategies of agricultural development on farm output, employment, income distribution and migration and to incorporating the employment objective into project, sub-sector and sectoral analysis in developing countries.

The Network maintains links with similar research networks in Latin America (ECIEL) and Asia (CAMS) and with organizations such as the FAO, ILO and the World Bank.

African Rural Employment Papers are distributed without charge to libraries, government officers and scholars.

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DETERMINANTS AND IMPACT OF RURAL-URBAN MIGRATION: A CASE STUDY OF SELECTED COMMUNITIES IN WESTERN NIGERIA

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This paper has been published as part of a three year study of rural employment problems in Africa which is being financed under an AID/Washington Contract (AID/csd 3625) with the Department of Agricultural Economics at Michigan State University. The research for this paper has been supported by a grant from the Rockefeller Foundation to the University of Ibadan and a Michigan State University sub-contract with the Department of Agricultural Economics and Extension of the University of Ibadan. The authors hereby express their gratitude to S. O. Olayide and John Caldwell for their comments on an earlier draft of this paper.

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ABSTRACT

Although sociologists, demographers, geographers and anthropologists have carried out a large number of studies of migration in Africa, only recently have economists pursued systematic research on migration. This economic analysis of migration is designed to test a number of hypotheses about the causes of out-migration from agriculture and the effects of the out-migration on the rural economy in Western Nigeria. Data were collected from 180 families in six villages in Western Nigeria and 480 migrants from these 180 families who were living in urban areas in Western Nigeria and in the capital city of Lagos during 1971-72.

The results of a multiple regression analysis of 480 migrants indicate that the age of the rural family, the education level of a migrant, the distance between the migrant's village and an urban centre, the rural-urban earnings differential, and the availability of relatives in urban areas are significant explanatory variables in the rural-urban migration of the villages studied. While the index of urban attractiveness is also positively related to rural-urban migration, the coefficient is not significant at the 5 percent level.

With respect to the effects of rural-urban migration on the rural economy, the findings suggest that out-migration is associated with increased outlay on hired labour, increased farm size, higher rural earnings per head and a net transfer of capital from the rural to urban areas.

Several policy implications emerge from the findings of this study. First, there is a need to narrow the urban-rural earnings gap. Second, policy makers should bear in mind that the provision of social amenities in rural areas will not in themselves stem the flow of out-migration unless employment opportunities in rural areas are expanded along with social services. Third, since the level of education influences the rate of out-migration from agriculture, educational policy should tailor investment in education to the demand for labour in urban areas. Fourth, the increased cash outlay on hired labour and the net transfer of funds from agriculture accompanying the out-migration process have important implications for the demand for agricultural credit and the process of agricultural development in the Western State of Nigeria.

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PREFACE

Since migration is a key component in the study of rural and urban labour markets, the African Rural Employment Research Network is encouraging the collection of primary data on migration as a foundation for national policy analysis of rural employment and rural development.

In African Rural Employment Paper No. 2, Byerlee reviewed 140 migration studies in Africa and reported that, despite the large number of studies, our current understanding of the specific determinants and impact of migration is not adequate for national policy analysis. Byerlee recommends that future migration research should recognize that:

(a) neither current theory nor methodology underlying research on migration in Africa is suitable when policy analysis is a major research objective;

(b) most underlying theory does not adequately specify economic variables such as relevant rural and urban incomes, the role of education and remittances in the migration process;

(c) African census data are not adequate for research on migration and, as a result, survey methods should be used;

(d) rural-urban migration should be studied in both rural and urban areas;

(e) "tracer" studies of migrants from rural areas can provide greater rural-urban comparability; and

(f) there are substantial advantages of integrating migration research with other ongoing micro-level research in rural areas, such as farm management studies in order to provide accurate economic data and more insights on the individual's decision to migrate.

Mike Todaro's 1969 model of migration has sparked considerable interest in migration research by economists and other social scientists in Africa. Todaro's model is being tested by R. Sabot in his comprehensive survey of migration in Tanzania. Michael Hay, an agricultural economist at the University of Minnesota, has recently completed a study of migra-

tion in Tunisia, and a Kenyan sociologist at the Institute for Development Studies, University of Nairobi--Shen Migot Adholla--has just completed the field work phase of a study of migration in Kenya. John Nabila's recently completed study of migration among the Fra Fra of Northern Ghana will be reported in a forthcoming African Rural Employment Paper.

Derek Byerlee and Joseph Tommy have begun a major study of migration in Sierra Leone. The Byerlee/Tommy migration survey will be carried out in rural areas in conjunction with an ongoing comprehensive farm-level production study. Byerlee and Tommy will also utilize tracer techniques to locate and interview migrants in urban areas at weekly intervals during a three-month period.

In this paper Sunday Essang and Adewale Mabawonku report their analysis of 480 migrants in Western Nigeria. The Essang/Mabawonku paper advances a number of testable hypotheses, presents empirical results and offers policy guidelines for similar research in other parts of Nigeria and Africa.

The results of ongoing research will contribute to improved theory and methodology for migration research in Africa, as well as provide specific policy recommendations for African governments. Results of some of the studies mentioned above will be published in forthcoming African Rural Employment Papers.

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I. INTRODUCTION

A distinguishing feature of the development process is the phenomenon of rural-urban migration. While this phenomenon might be regarded as an inevitable and desirable result of industrialisation, policy makers in the developing world have tended to view it with considerable anxiety because, in recent years, rural-urban migration has aggravated the problems of urban unemployment. In addition, it has led to a greatly increased demand for urban social services which has compelled hard-pressed policy makers to divert funds from productive investments to the provision of social amenities. Rural-urban migration, moreover, is also associated with a brain and capital drain from the rural to the urban areas, reducing the taxable capacity of rural people and, in some cases, creating a shortage of rural labour during the planting and harvesting seasons.

The magnitude of these problems has forced policy makers in many African countries to introduce measures to stem the tide of rural-urban migration. In their efforts to grapple with these problems, policy makers will need quantitative information on the important variables affecting rural-urban migration, as well as data on the consequences of such migration on the agricultural sector and on the rest of the economy. This study identifies and measures some of these variables in order to better understand the migration process and provide guidance to policy makers.

The paper is divided into six sections. Section II contains a brief review of the theoretical issues and a discussion of the hypotheses to be

tested. In Sections III and IV the conceptual and methodological issues of the study are discussed. The results of the regression analysis of the determinants of rural-urban migration and the effects of migration on the agricultural sector are discussed in Section V. The policy implications and conclusions are presented in Section VI.

II. THEORETICAL ANALYSIS OF THE CAUSES AND IMPACT OF RURAL-URBAN MIGRATION

Causes of Rural-Urban Migration

Sociologists, anthropologists and demographers have conducted a wide range of studies on the causes and effects of rural-urban migration in Africa and have provided considerable insight into the complex relationship between environmental and human factors on the one hand, and rural-urban migration on the other.[1/] In contrast, it is only in recent years that economists have addressed themselves to systematic research on migration in Africa.[2/] This section reviews some of the more recent studies by economists on the dynamics of rural-urban migration.

Analysis of the determinants of urban wage rates and measurement of the urban-rural earnings gap are important aspects of a study of rural-urban migration. Studies by Kilby [1967], Knight [1972], Ghai [1968] and Diejomaoh [1972] suggest that the wage rates in the modern (urban) sector are much higher than the marginal productivity of labour. In their view, the level of wages in the urban sector reflects such nonmarket factors as minimum wage laws, the strength of trade unionism, and the desire on the part of foreign firms to improve their image and guard against the charge of exploitation of labour.

Studies by Todaro [1969], Lewis [1967] and Rourke and Sakyi-Gyinea [1971] demonstrate that there is a large and growing gap between urban

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[1/] For a critical review of the literature on the causes of migration, see Mitchell [1959] and Nabila [1974].

[2/] For a critique of research on migration in Africa with emphasis on needed research by economists, see Byerlee [1972].

and rural earnings. Godfrey [1969] hypothesised the existence of a positive relationship between net migration to urban areas and the ratio of nonagricultural (urban) to agricultural earnings. Todaro [1969] has rigorously shown that the rate of rural-urban migration is a positive function of the urban-rural earnings differential weighted by the probability of obtaining urban employment. Although Todaro's model can be criticised[3/] for singling out one variable as an explanation of rural-urban migration, it is nevertheless the first serious attempt to subject rural-urban migration to rigorous economic analysis. While empirical evidence from Mabogunje's study in Nigeria [1970] showed a negative effect of regional income differential on rural-urban migration, studies by Sabot in Tanzania [1971] and by Beals, Levy and Moses in Ghana [1967] appear to substantiate Todaro's hypothesis.

In the opinion of some economists, rural-urban migration is the result of poverty and a lack of economic opportunities in the rural areas. Warriner [1970] asserts that migrants go to the cities to find jobs irrespective of the employment situation in urban areas. Elkan [1960] contends that migration to urban areas stems from low productivity and low income in agriculture which is subject to sharply diminishing returns because of population pressure. The empirical evidence is not, however, conclusive on this point. While it is true that rural-urban migration is a response to an absence of rural employment opportunities, in some thickly populated areas of Nigeria such as Kano and Owerri, it is equally evident that such migration takes place in the "land surplus"

[3/] For a critical review of the Todaro model of rural-urban migration, see Byerlee [1972, pp. 8-10].

areas of Western Nigeria, Mid-Western and Kwara States. Essang's current research on labour absorption in large-scale farms in Nigeria has discovered that plantations situated in these "land surplus" areas are currently facing a serious labour shortage which the managers attribute to rural-urban migration.[4/] Also there was a high rate of labour turnover on these large-scale farms because a large percentage of the educated labour left the farms in search of urban jobs.

Caldwell's study in Ghana shows that rural-urban migrants tend to originate from households of above average wealth who are in a position to meet the cost of educating their members (Caldwell [1968], Sabot [1972] and Mabogunje [1970]).

Impact of Rural-Urban Migration on the Rural Economy

A number of writers are of the view that internal migration results in a more efficient resource allocation among the sectors and regions of a country (Clark [1940]). This implies that the process of growth will be accelerated by removing impediments to such labour mobility. Accordingly, writers such as Mabogunje [1970] and Adegboye [1967] advocate land reforms to facilitate interstate as well as intrastate labour mobility. Eicher, et. al. [1970] suggest the removal of ethnic and tribal barriers in the interest of greater labour mobility from the densely populated to the thinly populated regions in order to facilitate the emergence of national and regional labor markets.

[4/] This study will be reported in a paper, "Determinants of Labour Shortage on Large-Scale Farms in Nigeria."

A change in agricultural output is another potential result of out-migration from agriculture. Todaro [1971], asserting that agricultural labour has a positive marginal product, associates rural-urban migration with a possible reduction of agricultural output. He argues that any calculation of the shadow wage of urban labour which fails to make allowance for this output reduction understates the real cost of rural labour employed on urban projects.

Rural-urban migration can also embody an intersectoral transfer of capital. For example, Johnson and Whitelaw [1972] estimated that 20 percent of urban earnings were remitted to the rural areas in Kenya. Sabot [1972] found that rural-urban migration involved a considerable transfer of capital from the rural to the urban areas in Tanzania. This capital transfer took the form of investment in the education of rural youths who migrated to the urban areas, taking their skill and earning power out of the agricultural sector.

This brief review of rural-urban migration studies in Africa suggests that while a number of writers have thrown considerable light on the migration process in general, there is a need for more policy oriented research which systematically tests specific hypotheses about the determinants of rural-urban migration, especially the hypotheses related to the influence of rural-urban income differential and the glamour of urban life. There is also need for research on the impact of rural-urban migration on various aspects of the rural economy. In this study we attempt to make a contribution to both the causes and impact of rural to urban migration. First, we will present data to test a number of hypotheses concerning the determinants of rural-urban migration. Second, we will

indicate, as far as possible with available data, the impact of rural-urban migration on such aspects of agricultural production as the expenditure on hired labour, farm size, family earnings and the intersectoral transfer of capital.

III. HYPOTHESES

The first hypothesis is that the age of the rural family (of which the migrant is a member) is positively related to the rate of rural-urban migration. As a family grows older, its members want to be self-sufficient and independent of one another which often necessitates their living apart or pursuing their fortunes in other environments. Younger members of the family may discover that the fertile portions of the family land have been appropriated by their elders and may be forced to seek employment outside the rural environment. These include the lack of commitment to rural life, the greater prospect of acquiring new skills and higher earnings in urban areas, the well-known preference of urban employers for young men who have much greater life expectancies and unencumbered by family obligations, an ability to withstand long periods of joblessness in urban areas. Lastly, it is possible that the greater physical strength of young migrants put them at a competitive advantage over older migrants in the job markets.

The second hypothesis is that a positive relationship exists between the rate of rural-urban migration and the level of education attained by the migrant. There are several explanations for this. First, the Nigerian educational system, like those in many other less developed countries, is oriented to the production of white collar job seekers who naturally migrate to the towns in search of such jobs. Second, education gives the potential migrant access to information on job prospects which is denied his uneducated counterpart. Third, the probability of employment in urban areas is much higher for the more educated migrant, given the requirement of minimum educational qualifications

for most jobs in the private and public sectors. Fourth, in contrast to the situation in the urban areas, an educated man has no preferential access to rural land.

The third hypothesis is that the distance between the source region and the receiving urban centres is negatively related to the rate of rural-urban migration. Several suggestions can be put forward to explain the hypothesised relationship. The nearer the rural areas to the urban centres the quicker the flow and the lower the cost of information on job prospects in the urban areas. Similarly, the nearer the rural area to the urban area, the smaller the cost of transportation borne by the migrant. The nearer the villages to the receiving urban centre, the greater the chance the migrant will be in a familiar environment in terms of ethnic composition.

The fourth hypothesis is that rural-urban migration is a positive function of the urban-rural earnings gap weighted by the probability of securing urban employment. Among the factors which widen the earnings differential in Nigeria are marketing board pricing policies which depress farm incomes (Idachaba [1973], Lewis [1967] and Diejomaoh [1972]) and minimum wage legislation which increases money wages in urban areas relative to wages in agriculture.

The fifth hypothesis is that availability of relatives located in urban areas is positively related to the rate of rural-urban migration. Relatives or kinsmen provide information on job prospects, make contact with prospective employers and sometimes "nail down" the job for a prospective migrant. The proximity of relatives considerably reduces the cost of migration from the migrant's viewpoint because they can provide transportation fare and housing, and meals while the migrant is jobless.

The sixth hypothesis is that rural-urban migration is a response to the "attractiveness" of the urban areas in contrast to the drab and "colourless" life in the rural areas. This is the "bright lights" theory of rural-urban migration which contends that the rate of migration is positively related to the comparative scope and quality of social amenities in rural areas and urban centres.

A priori, we would expect the following relationship:

$$\frac{dY}{dX_1} > 0 \qquad \frac{dY}{dX_4} > 0$$

$$\frac{dY}{dX_2} > 0 \qquad \frac{dY}{dX_5} > 0$$

$$\frac{dY}{dX_3} < 0 \qquad \frac{dY}{dX_6} > 0$$

where:

Y represents the rate of rural-urban migration

X_1 = the mean age of the rural family members

X_2 = the average years of schooling of the migrants

X_3 = the distance from the rural area to the relevant urban centre

X_4 = the rural-urban earnings differential

X_5 = availability of relatives of migrants in urban areas

X_6 = the index of urban attractiveness.

Using the above variables, a multiple regression model was developed in both the ordinary linear functional and the log linear functional forms viz:

$$Y = b_o + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + e \quad \text{and}$$

$$\text{Log } Y = b_o + b_1 \log X_1 + b_2 \log X_2 + b_3 \log X_3 + b_4 \log X_4 + b_5 \log X_5 + b_6 \log X_6 + e$$

where the Y and the X variables are as specified above and e is the error term.

IV. METHODOLOGY

Area of Study

This study was carried out in Western Nigeria. For this purpose, western Nigeria was divided into two zones: (a) the arable crop zone which includes the old Oyo Province and (b) the tree-crop rain-forest area comprising mainly the cocoa growing areas. Within each zone three villages were randomly selected. From each of the selected villages, thirty households were randomly chosen giving a total sample size of 180 households.

Data Collection

A questionnaire was designed and pretested.[5/] Using the revised questionnaire, information was collected from the sample household heads about the socio-economic and demographic characteristics of both the rural members of the family as well as those who had migrated to urban areas. Data were collected on the age, level of education, occupation and earnings of family members in the villages. Addresses for approximately 620 members of the 180 rural households who had migrated to urban areas were obtained from their rural relatives. Of these 620 migrants, 480 were located and interviewed in urban areas in the Western State and Lagos. These 480 migrants formed the sample size used in the regression analysis. The 480 migrants were interviewed to obtain data on their age at migration, the duration of their urban stay, their educational qualifications at the time of

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[5/] A copy of the questionnaire can be obtained from the Department of Agricultural Economics, University of Ibadan, Ibadan, Nigeria.

migration, the type of jobs currently held, the remittances (in cash) flowing between the migrant and the rural household, and whether the migrant was living alone or with relatives.

Definition of Variables

In order to facilitate the interpretation of the results, some comments on the variables are necessary. The rate of migration, the dependent variable, Y, is defined as the percentage of rural family members who migrated to and were resident in urban areas at the time of the field research for this paper. This rate was computed by dividing the number of migrants per family[6/] by the total number of people in the family and expressing the result as a percentage. In making the calculation, however, no allowance was made for the possibility that some of the migrants might be undergoing educational or other training in urban areas.

The mean age variable, X_1, was obtained by dividing the total of the ages of all family members by the number in the family. The education variable, X_2, was computed as the average years spent by the rural-urban migrant in formal schooling. The distance variable, X_3, is the distance between the rural areas, the migrants' homes, and the urban centres; it was computed from available data on mileage in the country.

The urban-rural earnings differential variable, X_4, was obtained in several steps. First the probability of urban employment was estimated as the ratio of total number of people employed and the number looking for jobs. The data were obtained from the Statistics Division of the

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[6/] Throughout this paper, unless otherwise specified, the word "family" refers to the collection of household members "who eat from the same pot".

Western Nigeria Ministry of Economic Development and Reconstruction and the Federal Office of Statistics, Lagos.

Second, the data on urban earnings were computed using the average wage rate of unskilled and semi-skilled workers in the modern sector. These data have several shortcomings. Insofar as they do not include fringe benefits which sometimes constitute a high proportion of the employers' wage bill, they understate the earnings of the workers in the public and private modern sectors. On the other hand, the fact that the earnings data took no account of earnings in the traditional, unorganized, low productivity urban sector where much lower earnings prevail means that the earnings data overstated the actual situation. However, it should be pointed out that the rural-urban migrants base their decision to migrate on the wage rates published in government gazettes, newspapers, etc. which take no account of fringe benefits or the earnings in the unorganized sector. Hence, the limitations indicated above should have marginal effects on the result.

Third, the rural earnings figures were obtained for each household from information provided by the household heads. Farm income was obtained by adding reported earnings on (a) sale of crops or crop products, (b) sale of livestock and by-products, (c) rent from land, and (d) sale of own (farmer's or household) labour and the value of domestic consumption of food produced on family plots. To these were added earnings from other sources such as secondary, nonfarm occupations in which members of the household were engaged. To calculate farm expenses, information was obtained on expenses for seeds, fertilizer, chemicals, hired labour, rent and interest. The sum of these items was subtracted from the gross earnings to obtain a rough estimate of net farm earnings. The figure thus

obtained was divided by the number of people in the household to calculate the average earnings per household member.

The earnings differential was then computed as $P(Y_u - Y_r)$ where P is the probability of obtaining an urban job, Y_u, urban earnings per head and Y_r, rural earnings per head.

The availability of relatives, the X_5 variable, was entered as a dummy variable. When a migrant was reported as living alone, a score of 1 was entered, and when he lived with relatives, zero was entered.

The index of urban attractiveness, the X_6 variable, was computed as follows. Data on capital and recurrent expenditures on urban infrastructure were obtained from the Statistics Division of the Western State Ministry of Economic Development, and the Federal Office of Statistics. The same set of data for the selected villages was obtained from the divisional or council offices. Using the average annual expenditure estimate of Ibadan as a base figure, corresponding values for other urban centres were obtained. From these, an index of urban attractiveness was computed for each urban centre and the number of migrants recorded for each urban centre.

V. EMPIRICAL RESULTS

Determinants of Rural-Urban Migration

The results of the regression analysis are shown in Table 1.

The mean age variable [X_1]: The coefficient of the mean age of the rural family has, as postulated, a positive sign and is significantly different from zero at the 5 percent level in all the equations.

The education variable [X_2]: The coefficient of X_2 has a positive sign and is significant at the 5 percent level in all equations, thus confirming the hypothesized positive relationship between education and the rate of rural-urban migration.

The distance variable [X_3]: As postulated, a negative relationship was found between the rate of rural-urban migration and the distance variable. The coefficient is significant at the 5 percent level.

The urban-rural earnings differential variable [X_4]: The coefficient of X_4 is positive and significant at the 5 percent level. This is in accord with the hypothesis formulated by Todaro. However, in view of the usual problems of estimating rural earnings and of measuring the urban wage rates, this coefficient should be interpreted with caution.

Availability of urban relatives variable [X_5]: The positive sign of the coefficient of this variable confirms our hypothesis that the propensity to migrate is greater among those who have relatives in urban areas.

The index of urban attractiveness variable [X_6]: Although the coefficient of X_6 has the expected positive sign, it is not significant at the

Table 1. Estimates of the Coefficients of the Determinants of Rural-Urban Migration

(Figures in parentheses are the standard errors of the estimates)

Ordinary Linear Function

EQ. 1 $Y = -15.5249 + 61.8045X_1^* + 1.7581X_2^* - 0.0538X_3^* + 2.9701X_4^* + 3.7170X_5^* + 0.6311X_6$
(6.5120) (9.4759) (0.3422) (0.0178) (0.7396) (1.7571) (0.5392)
$R^2 = 0.8412$, $d+ = 2.0059$

EQ. 2 $Y = -4.5152 + 55.9305X_1^* + 1.8424X_2^* - 0.0581X_3^* + 3.4219X_4^*$
(3.7697) (9.4234) (0.3517) (0.0182) (0.7371)
$R^2 = 0.8257$, $d+ = 1.9867$

EQ. 3 $Y = -11.8773 + 56.4756X_1^* + 1.8161X_2^* - 0.0580X_3^* + 3.3717X_4^* + 0.7711X_6$
(6.4381) (9.3654) (0.3497) (0.0181) (0.7328) (0.5386)
$R^2 = 0.8306$, $d+ = 1.9508$

EQ. 4 $Y = -9.8386 + 61.7271X_1^* + 1.7754X_2^* - 0.0535X_3^* + 2.9832X_4^* + 3.9695X_5^*$
(4.3477) (9.5014) (0.3428) (0.0178) (0.7415) (1.7486)
$R^2 = 0.8379$, $d+ = 2.0507$

Log Linear Function

EQ. 1 $\log Y = 4.0238 + 0.5863\log X_1^* + 0.1942\log X_2^* - 0.1541\log X_3^* + 0.1327\log X_4^* + 0.2128\log X_5^* + 0.1486\log X_6$
(0.4868) (0.0737) (0.0566) (0.0485) (0.0517) (0.0758) (0.1653)
$R^2 = 0.7844$, $d+ = 1.9835$

EQ. 2 $\log Y = 4.3356 + 0.5448\log X_1^* + 0.2169\log X_2^* - 0.1592\log X_3^* + 0.1535\log X_4^*$
(0.3462) (0.0762) (0.0589) (0.0509) (0.0539)
$R^2 = 0.7543$, $d+ = 1.8991$

EQ. 3 $\log Y = 3.9051 + 0.5469\log X_1^* + 0.2134\log X_2^* - 0.1609\log X_3^* + 0.1493\log X_4^* + 0.1987\log X_6$
(0.5090) (0.0760) (0.0589) (0.0509) (0.0539) (0.1725)
$R^2 = 0.7589$, $d+ = 1.8922$

EQ. 4 $\log Y = 4.3464 + 0.5861\log X_1^* + 0.1962\log X_2^* - 0.1526\log X_3^* + 0.1354\log X_4^* + 0.2202\log X_5^*$
(0.3286) (0.0766) (0.0564) (0.0484) (0.0516) (0.0753)
$R^2 = 0.7817$, $d+ = 2.0058$

*Significantly different from zero at the 5 percent level.

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5 percent level in all equations.[7] A comparison of the R^2 values of equations (1) and (4) in Table 1 reveals that the contribution of X_6 in determining the rate of migration is negligible.

Impact of Rural-Urban Migration on the Rural Economy

In analysing the impact of rural-urban migration on the rural economy of the communities studied, attempts were made to estimate the impact of out-migration on: (a) expenditure on hired labour, (b) farm size, (c) level of earnings and (d) intersectoral transfer of capital. Ideally, any attempt to measure the effects of rural-urban migration should entail a comparison of the variables above in two periods--the period before migration and the period after migration. Allowance should also be made for a time lag. In practice, it was not possible to make such intertemporal comparisons because of the lack of information on when large-scale rural-urban migration actually started in the communities and because of the absence of data covering a period of more than two years. Accordingly, the method employed was to group the rural households into two categories--those with migrants in urban areas and those without. A comparison was then made of the farm size, per head earnings, rate of literacy, etc., between the two groups.[8]

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[7] One explanation for this can be found in the hypothesis itself. For example, it is possible that urban attractiveness ("bright lights") might attract the curious, but not the "economic man". In a society which places so much premium on materialism one expects economic factors to be of greater importance in determining the rate of migration than urban "attractiveness".

[8] For a parallel study of the total migration cycle of the Fra Fra of northern Ghana, including a tracer study of migrants in ten urban centres in Ghana and an analysis of the impact of migration on the sending areas, see Nabila's [1974] recently completed study.

The magnitude of capital transferred from the rural to the urban areas was measured as follows:

(a) Average yearly expenditure on the education of a rural youth who later migrated to the town was obtained from each household.[9/] To these were added the yearly per head government capital and recurrent expenditures on education in the institutions attended by the migrants.

(b) Information was also obtained on money sent from the rural areas to migrants in urban areas for miscellaneous expenses and transportation allowances which, usually, are quite significant in the early stages of a migrant's sojourn in town. Data in (a) and (b) were summed to calculate the total transfers from the rural areas.

(c) Information on the transfers from urban to rural areas was supplied by the migrants and cross-checked with relatives in the villages. Such transfers consist of school fees to brothers and other relatives in the villages, money sent to parents regularly or for specific purposes such as funerals, building of houses, purchase of land, etc.

Admittedly, the calculation of intersectoral transfers of funds presented several intractable problems. First, there were inconsistencies in the data reported by the urban residents and their rural families with re-

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[9/] There are several reasons why the migration of educated youth from the rural to the urban areas can, analytically, be viewed as a transfer of capital from the rural to the urban areas. Most parents regard investment in education as investment in creating human capital in the same way as a cocoa farmer looks upon investment in cocoa trees. Both types of investment are expected to yield a stream of income over the lifetime of the asset. Both involve sacrifice of current consumption and a considerable waiting period.

spect to the amount of money transferred from the rural to the urban areas, and vice versa. Attempts to reconcile the data were costly[10/] and generally unsuccessful. Consequently, an average of the figures given by both parties was usually computed. Second, it was not possible to compute the contribution of urban residents to the educational expenses incurred on a rural to urban migrant. Third, the valuation of the food items sent from the rural to urban areas presented problems of whether to use rural market prices or urban retail prices. In view of the absence of rural retail price data, urban retail prices were used--an approach which imparts an upward bias to the income transfer from rural to urban areas.

Impact of Cash Outlay on Hired Labour

In order to maintain the level of agricultural output on farms following out-migration of some family members it may be necessary to increase the use of hired labour. The tendency to depend on hired labour is reinforced by the fact that rural-urban migration increases the mean age of the rural family. Also, the need for hired labour will be positively related to the size of a family's agricultural holdings after the migration of one or more family members. In order to determine the extent to which the factors above influence the cash outlay on hired labour, a multiple regression analysis was used. The factors include: Y, the dependent variable represents cash outlay on labour by the rural family; the independent variables, X_1, the size of the family farm; X_2, the mean age of the rural family members and X_3, the percentage of family members outside agriculture.

[10/] These attempts entailed a large number of time-consuming trips to the villages.

The estimates of the determinants of cash outlay on hired labour are as follows:

$$Y = 4.5144 + 1.9023\ X_1^* + 0.0975\ X_2^* + 0.2349\ X_3^*$$
$$\quad\ (2.4628)\ (0.1358) \qquad (0.0583) \qquad (0.0351)$$

$$R^2 = 0.7545$$

$$d^+ = 1.7514.$$

The coefficients of farm size variable [X_1], mean age variables [X_2] and percentage of family members outside agriculture [X_3] all have the expected signs and differ significantly from zero at the 5 percent level. The results thus confirm the hypothesised relationship between cash outlay on hired labour, the rate of rural-urban migration, size of farm after migration, and mean age of the rural family after migration of some of its members.

Farm Size

The movement of a family member out of agriculture is likely to be accompanied by a corresponding increase in the family's land/man ratio. Thus, families with migrant members are likely to have larger farms per head than those who land/man ratio is low because their children have not migrated to town. Implicit in this hypothesis are two vital assumptions. The first, a demographic assumption, relates to the per capita farm size among rural family members. Where the rate of rural-urban migration of the members of individual rural families exceeds each family's natural rate

of growth, the size of holdings available to each member would increase correspondingly.

The second, and perhaps more critical, assumption concerns the rights of individual family members to the land owned by the family. Under traditional tenure in Western Nigeria, each family member, whether working on the farm or living in urban areas, has a claim to part of the family land. However, traditional tenure has a built-in provision by which the members of the family working on the farm have a claim on the unappropriated family virgin land according to their ability to clear and maintain the land (Mabawonku [1971]). The consequence is that members of rural families remaining on the farm often encounter little competition in expanding their farms.

The data presented in Table 2 conform with the postulations above. The distribution shows that families with migrant members had larger farms than those without. For example, in the 1-5 acre range there were about 17 percent of the households with migrant members as compared with 63 percent among those households without migrant members. More important is the proportion of each family group cultivating larger farms. While less than 2 percent of families without migrant members were in the 16-20 acre group, 20 percent of households with migrant members were in this class. Moreover as farm size increased, the proportion of households without migrant members fell at a greater rate relative to the proportion of families with migrant members.

Table 2. Distribution of Rural Households by Size of Farm

Farm Size (Acres)	Households			
	With Migrant Members		Without Migrant Members	
	Percent	Cumulative	Percent	Cumulative
1 - 5	16.6	16.6	63.4	63.4
6 - 10	38.6	55.2	25.6	89.0
11 - 15	23.0	78.2	8.5	97.5
16 - 20	20.0	98.2	1.3	98.8
21 - 25	1.8	100.0	1.2	100.0
> 25	--		--	

Rural Earnings Per Rural Household Member

Studies in Western Nigeria have shown a high positive correlation between farm size and farm earnings (Essang [1970]). This is to be expected in a situation in which output is largely determined by the total number of acres under cultivation. Therefore, if rural-urban migration leads to an increase in farm size, the chain of reaction will eventually result in higher per head earnings since each individual rural member cultivates a larger holding. On the other hand, farm size (and possibly output) may remain at the same level after migration, and yet earnings per head may increase because rural-urban migration leads to a reduction in the number of family members. Given a constant level of earnings and as long as the labour input after migration is smaller than before, labour productivity should rise and earnings should increase.

Table 3 shows the results of the analysis of the reported per head earnings during the year prior to the survey period. The table shows that a greater proportion of households without migrant members were in the lower earnings bracket. While around 80 percent were earning ₦100 and below per head, the proportion of families with migrant members in this earnings range was less than 50 percent. In the higher earnings bracket, 25 percent of households with migrant members had earnings greater than ₦140 per head, but only about 10 percent of the families without migrant members were in this group.

Table 3. Distribution of Rural Households by Size of Earnings 1971-72

Earnings Per Rural Household Member ₦ [a]	Households			
	With Migrant Workers		Without Migrant Members	
	Percent	Cumulative	Percent	Cumulative
Below 20	--	--	--	--
20 - 40	10.0	10.0	17.5	17.5
41 - 60	10.0	20.0	21.3	38.8
61 - 80	12.5	32.5	21.5	60.3
81 - 100	12.5	45.0	20.0	80.3
101 - 120	13.7	58.7	6.3	86.6
121 - 140	16.2	74.9	4.0	90.6
> 140	25.1	100.0	9.4	100.0

[a] ₦ = Naira. One Naira is approximately equal to U.S. $1.50.

Intersectoral Transfer of Capital

An interesting but poorly documented consequence of rural-urban migration is the extent to which earnings are transferred between the rural and urban sectors. In approaching this complex issue, the difficulties which arise from lack of data restrict the study to two aspects. The first deals with the transfer of capital through investment in the education of rural youths who later migrate to urban areas. The second relates to the size and nature of remittances flowing between the rural and urban sectors.

Table 4 indicates, that, except in the case of Imo-Lisa Village, the rural areas bear a very high burden of educational expenses of the migrants. Since migrants live and work in urban areas, expenditures for their education must be regarded as an investment in urban areas and hence a clear transfer of capital from the rural to the urban areas. It should be pointed out that cash earnings, as reported in Table 4, represent the sum of money that accrues to a rural family from the sale of crops or crop products and livestock less expenditure on labour and other inputs. Cash earnings are expected to be less than total rural family income.

The annualized educational expenditure per migrant was calculated by computing the average of household expenditure on the education of the migrant over a period of three years (1969-71).

The second aspect of the intersectoral flow of capital involves the transfer of funds to the migrant by providing transportation allowances, food, and the cost of accommodation and clothing in the initial year of a migrant's residence in the urban area. Table 5 indicates that funds transferred out of agriculture for these purposes ranged from ₦13.2 to ₦48.6 in 1971-72.

Table 4. Educational Expenditures on a Migrant and Cash Earnings Per Rural Household Member in Selected Villages of Western Nigiera, 1971-72

Village	Cash Earnings Per Rural Household Member ₦ [a]	Annualized Educational Expenditure Per Migrant ₦ [a]
Araromi	129.0	115.4
Sinawa	196.0	217.9 [b]
Imo-Lisa	183.6	49.8
Adegbola	110.0	114.1 [b]
Maya	162.8	109.5
Oso-Ogun	132.6	110.9
Average	152.3	119.6

[a] ₦ = Naira. One Naira is approximately equal to U.S. $1.50.

[b] It is possible that there was considerable borrowing to finance education in these two villages.

Table 5. Amount Transferred to Urban Migrants and Earnings of Rural Household Members in Selected Villages of Western Nigeria, 1971-72

Village	Cash Earnings Per Rural Household Member ₦	Amount Transferred to Migrants in Urban Areas Per Migrant ₦
Araromi	129.0	13.2
Sinawa	196.0	44.0
Imo-Lisa	183.0	24.0
Adegbola	110.0	16.0
Maya	162.8	29.4
Oso-Ogun	132.8	48.6
Average	152.3	29.2

A number of researchers assume that urban migrants send an appreciable amount of money to their rural relatives which could offset the remittances to urban areas considered above. In Table 6 we compare the rural to urban remittances with the urban to rural[11/] remittances. The picture which emerges is that there is a net transfer of cash from the rural to the urban areas. When this is combined with investment in the education of the migrant, the net transfer of funds from the rural to the urban areas is considerable.

Table 6. A Comparison of Remittances Between Rural and Urban Areas in Western Nigeria, 1971-72

Village	Cash Earnings Per Rural Household Member	Amount Transferred from Rural to Urban Areas Per Migrant	Amount Transferred from Urban to Rural Areas Per Migrant	Net Transfer
				Amount Per Migrant
		₦	₦	₦
Araromi	129.0	13.2	--	-13.2
Sinawa	196.0	44.0	6.4	-37.6
Imo-Lisa	183.6	24.0	3.4	-20.6
Adegbola	110.0	16.0	50.4[a/]	+34.4
Maya	162.8	29.4	6.8	-22.6
Oso-Ogun	132.6	48.6	10.0	-38.6
Average	152.3	29.2	12.8	-16.4

[a/] Many of the migrants from the village were in the armed forces.

[11/] The main explanation for the small amount of money transferred from urban to rural areas is the fact that a majority of the migrants are engaged in low-paying jobs.

VI. CONCLUSIONS AND POLICY IMPLICATIONS

The findings presented in this study have a number of important implications. In Section V it is shown that, for several reasons, an increase in the mean age of the rural household is associated with an increase in the rate of rural-urban migration. The consequence is that an older population unable to cope with arduous farming operations is left behind. It is not surprising, therefore, that some parts of rural Nigeria are experiencing stagnating or even declining agricultural output and higher production costs. The problems thus created by migration cannot be solved to any appreciable extent by resorting to hired labour, not only because of the relative poverty of most rural communities but also because rural-urban migration itself leads to the scarcity of farm workers.[12/]

The finding that the level of education is a significant variable in explaining the rate of rural-urban migration implies that the economy should expect a far higher rate of rural-urban migration in the future as the various governments accelerate the expansion of primary and secondary education. Also, given Nigeria's urban-oriented development strategy and the capital-intensive character of import substitution industrialization, urban unemployment should be expected to increase over time. Attempts will have to be made, however reluctantly, to pursue investment and industrial location policies within the context of an explosive increase in the urban labour force in the decades ahead. Concurrently, there is need for a rural development strategy which encourages small farmers and labour-intensive indus-

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[12/] S. M. Essang, "Determinants of Labour Shortage on Large-Scale Farms in Nigeria," forthcoming paper.

tries in rural areas and the tailoring of educational investments to the acquisition of basic skills.

Subject to data limitations and the measurement problems indicated in Section III, the statistical results appear to confirm our hypothesis regarding the association of rural-urban migration with the rural-urban income gap. Our survey data show this association is positive and quite significant. Therefore, it would be unrealistic to expect government exhortations to have any effect on reducing the rate of rural-urban migration so long as current development policies and minimum wage legislation maintain the urban-rural real income gap.

The relationship between migration rate, the distance variable (X_3), as well as the association between migration rate and the availability of of relatives of migrants in the urban areas indicate a rational calculation by the migrants. To minimize the costs associated with the decision to migrate, a migrant has to evaluate not only the transportation cost but also the costs of settling himself in an urban area. He, therefore, decides to move to the nearest urban area or where he has relatives who can provide him with shelter and assistance in securing urban employment. The implication here is that a decentralization of industries and the creation of farm and nonfarm employment opportunities, in the rural areas, by reducing or eliminating the cost of migration may lead to a reverse in the direction of the present flow of migration.

The findings of this study suggest that the influence of urban amenities on the rate of rural-urban migration has probably been exaggerated by a number of scholars and policy makers. While it is possible that "bright lights" and cinema houses attract the curious, their attraction for the "economic man" is unlikely to be great. The implication of our

findings is that the mere provision of amenities in the rural areas will not be sufficient to stem the tide of rural-urban migration. Such amenities must be accompanied with job opportunities in small-scale rural industries, increased investment in rural infrastructure, etc. Unless the rural inhabitants have jobs and incomes, it is difficult to see how they can maintain, let alone enjoy, such amenities as hospitals, cinema houses and electricity.

On the impact of rural-urban migration on the rural economy, our study showed a considerable expenditure on hired labour by rural households. This we found to be a result of the decline in the size of rural family labour force, as well as changes in rural family composition brought about by the high rate of out-migration from the rural area. It was also found that rural-urban migration was accompanied by increased farm size and higher earnings per rural household member. The estimation of the transfer of funds between the rural and the urban areas showed that the annualized cost of education of a migrant was approximately ₦120 per migrant. While an average of ₦30 per rural household member was sent to migrants in the urban areas as maintenance and "out-of-pocket" allowances, the transfer from the urban area was approximately ₦13 per migrant. It can therefore be inferred that the higher rural earnings which accompanied rural-urban migration is dissipated in the form of increased hired labour costs and by transfers to the urban area. The impact of out-migration is therefore a net loss, in both physical and financial terms, to the rural areas. While it is reasonable to expect the rural areas to generate a surplus for the industrial sector, a rapid depletion of rural resources, as this study seems to indicate, will lead to uneven development.

Although our study was restricted to the Western State of Nigeria, we think that economic research on migration should be expanded to cover a wider area in the country in order to provide a better understanding of the migration process as a link between rural and urban labour markets.

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